

are still, indeed, driving madder out of the market. Attention will, no doubt, be centred upon other and more profitable plants. With regard to the routine work of the gardens, that is the distribution of seeds and plants, it does not compare badly with botanic gardens of greater pretension, for we learn that nineteen Wardian cases were dispatched during the year, containing about 800 stove and greenhouse plants, besides which 1,500 packets of seeds were also distributed to all parts of the world.

THERE is in the valley of the Maota in Switzerland, a grotto penetrating the mountain, and called the *Lauiloch*. It had not been explored beyond the Gorge du Loup, but recently some venturesome young people of Ilgau have traversed this passage, and have penetrated, it is said, two whole leagues into the mountains, crossing various cavities where human foot had never trod before. They came at last to a deep fissure, which they could not explore, being without cords or ladders. A society has been formed for further exploration of the region, and the results will be published shortly.

IN a paper recently read to the Franklin Institute, Prof. Ennis gives the excellent advice to teachers that every day when the last half-hour of school-time arrives, the pupils should take their seats closely in front of the teacher's table, and he should then perform some scientific experiment, or exhibit some object of natural history, and tell all that can well be told about it. The pupils will make the more rapid progress in all their primary studies in consequence. The enjoyment of these scientific lectures is like dessert after dinner.

A PECULIAR kind of industry, that of breeding maggots, has lately been tried in Paris. Over the soil were spread large quantities of stale fish, dead lobsters, odorous poultry, and other refuse of the markets, as much as half a ton of large fish being taken on the premises in a single day. The maggots, which soon became abundant, were carefully picked out and packed in casks of galvanised iron, and finally were sold for fish bait and chicken food. The remaining refuse was converted into manure. Proximity to such an establishment could not have been very pleasant, and exposed provisions in the neighbourhood suffered largely from the visits of numberless flies. The police stepped in and suppressed the manufacture.

THE inhabitants of the Upper Engadine, one of the most attractive sites in Switzerland, have passed an order forbidding to sell or destroy a local wild-flower, which is called *Edelweiss*, and well-known to botanists. The destruction was so active that *Edelweiss* was fast disappearing.

THE three-yearly session of the International Congress for measuring the figure of the earth will take place at Stuttgart in the last days of September, under the presidency of Gen. Hanez, a Spaniard. The vice-president is Prof. Bauernfeind, late director of Munich Polytechnic School. It is said that France for the first time will join the Congress, and will be represented by Capt. Mouchez and Loewy, two members of the Bureau des Longitudes.

THE following list of candidates successful in the competition for the Whitworth Scholarships, 1877, has been published by the Science and Art Department. William I. Last, Mechanical Engineer; F. Ogden, Mechanic; W. F. How, Engineer; W. S. McKenzie, Engineer; A. D. Ottewell, Draughtsman; D. A. Low, Engineer.

THE laboratories of the experimental farm at Vincennes, belonging to the French National School of Agriculture, were inaugurated the other day by the Minister of Public Instruction of the French Republic.

THE *Report* of the Royal Society of Tasmania contains among other papers of interest several important papers on Tasmanian shells by the Rev. J. E. Tenison-Woods.

THE bones of the bird hitherto known as *Tithornis emuinus* recently found at Sheppey, have enabled Prof. Owen to conclude that it was one with enormous wings, closely allied to, and much larger than, the albatross. The Professor, who has a paper on the subject in preparation, proposes to substitute a more appropriate name than the one given by Bowerbank. The bones are in the private collection of Mr. W. H. Shrubsole, of Sheerness-on-Sea, by whom they were found.

PROF. LANGLEY contributes to the *American Journal of Science and Arts* for July, an interesting paper "On the possibility of transit observations without personal errors."

THE Committee Report on the annual prize distribution of the French Société de Géographie appears in the Society's *Bulletin* for June. The recipients (to whom medals, &c., were awarded in April) are Lieut. Cameron, M. Roudaire, MM. de Folin and Leon Perrier, and M. Gravier; an account is given of the work of these investigators.

WE notice the appearance of a most interesting Russian work in the *Bulletin* of the Moscow Society of Friends of Natural Science, being a "Description of the various Zoological Gardens of Europe." The work is a collection of reports upon the most important zoological gardens, made by zoologists specially sent for that purpose, during 1876, by the Society above mentioned and by the Society of Acclimatisation, in order to find the best scheme for the organisation of the Zoological Gardens of Moscow. The introduction to the work is written by Prof. Bogdanoff.

THE additions to the Zoological Society's Gardens during the past week include a Grivet Monkey (*Cercopithecus griseo-viridis*) from Africa, presented by Mr. J. Harvey; a Weeper Capuchin (*Cebus capucinus*) from Brazil, presented by Mrs. Cameron; a Wood Brocket (*Cervus nemorivagus*) from Caura, presented by Mr. C. C. Berington; an Oil Bird (*Steatornis caripensis*) from Trinidad, presented by Mr. W. G. de Voëux; a White Goshawk (*Astur nova hollandiae*), a Berigora Hawk (*Hieracidea berigora*) from Australia, presented by Major Spicer; a Harpy Eagle (*Thrasaetus harpyia*), a Great-billed Rhea (*Rhea macrorhyncha*) from South America, received in exchange; an Axis Deer (*Cervus axis*) born in the gardens.

UNIVERSITY AND EDUCATIONAL INTELLIGENCE

SCIENCE AT KING'S COLLEGE, LONDON.—We understand that the Council of King's College have established a Science Course, including those subjects which, according to the new regulations, are required of candidates for the First B.Sc. or for the Preliminary Science Examinations of the University of London. Candidates for the Indian Civil Service, for the Home Civil Service, for the Indian Public Works Department, for the Royal Military Academy at Woolwich, and for other public examinations, will find in the course the scientific subjects which are required for those examinations. The course of study is under the direction of Prof. W. G. Adams. In addition to teaching and lectures in the several subjects, there will be included in the course Demonstrations and Practical work in the Physical, the Chemical, and the Biological Laboratories. The subjects for first year students in this course will be Mathematics, Elementary Mechanics, Physics, Chemistry, Zoology, and Botany, with practical work in each of the three laboratories. The second year's course will include these subjects with Geology.

EDINBURGH.—The Summer Session has just closed. In point of numbers the session 1876-77 has been the most prosperous the university has ever enjoyed, there being no fewer than

2,350 matriculated students. Last year the number was 2,065. The classes have consequently been large; especially is this true of the medical classes. For instance, the class of anatomy had 500 students on its roll. Sir Wyville Thomson's lectures were attended by upwards of 400 students; and Prof. Balfour had close upon 400 students in his class.

Prof. Lister has given his last lecture. At the close, Dr. J. B. Balfour in name of his fellow-students, expressed their regret at losing Mr. Lister, but at the same time honoured the motives which had led him to make the change, and wished him all success in the new sphere of work. Prof. Lister in replying said he felt very much gratified to find that his motives had not been misconstrued, and that so many of the students showed by their presence that they attributed his leaving them to a sense of duty. He thanked them for being so courteous and attentive, and appreciative of his efforts to teach, and wished them all happiness and prosperity.

TAUNTON COLLEGE SCHOOL.—Sixteenth and twenty-third in this year's list of successful candidates for Cooper's Hill are Messrs. Salter and Woollcombe, from the Taunton College School. This is an amusing commentary on the facts which we recorded some weeks ago.

BERLIN.—The magnificent new physiological laboratories are now nearly completed, and will be opened to students at the commencement of the winter semester. Prof. Dubois Raymond takes the directorship, and will be assisted by Prof. Kronecker, from Leipzig, and Prof. Baumann, from Strassburg, two of the more promising young physiological chemists of Germany. Prof. Helmholtz, who has been elected rector of the university for the coming year, will also take possession, during the coming autumn, of the spacious new physical laboratories which adjoin the physiological department.

MÜNSTER.—On July 19, the academic authorities laid the corner-stone of a spacious edifice which shall contain the lecture-rooms of the professors. The chemical laboratory of the newly-elected professor of chemistry, Dr. A. Oppenheim, is now nearly equipped, and will be opened to students during the coming autumn. It is reported that the Prussian Ministry of Public Instruction has the intention of supplying the lacking faculties of law and medicine, and of placing Münster on an equal basis with the other Prussian universities. The number of students at present is 300.

HEIDELBERG.—On July 27 the university authorities and students united in a festal celebration in honour of the twenty-fifth anniversary of the acceptance of a professorship in Heidelberg by Robert Wilhelm Bunsen. During the evening, one of those lengthy, picturesque, torchlight processions, so familiar to the residents of German university towns, led by gaily costumed marshalls, with gleaming swords, moved through the streets, to the residence of the veteran chemist, to extend to him the greeting of the students. Prof. Bunsen, who makes even shorter speeches than Gen. Grant, responded in a few modest words, accepting the honour more as a recognition of the offerings made by the university to the cause of science and especially of chemistry. The evening closed with the characteristic German *Commerz*, in which ample tribute was paid to the eminent services of the great chemist in speech, poem, and song. Prof. Bunsen entered as a student at Göttingen fifty years ago. After six years of study there and at Paris, Vienna, and Berlin, he became privat-docent at Göttingen, then accepted, in 1836, a call to the Polytechnic of Cassel, as Wöhler's successor, removed in 1838 to Marburg, where he became in 1841 an ordinary professor, and from thence in 1851 to Breslau. In 1852 he followed a call to Heidelberg, where a new laboratory was built for him, and where he has remained despite many tempting offers from Berlin and other wealthier universities. His success as a teacher here has been unbounded, his laboratory and auditorium being full to overflowing, and the contingent of foreign students, from every quarter of the globe, being especially large. With the exception of his classical researches on acodyl, and discovery of the antidotes for arsenious acid, most of Bunsen's more important discoveries occurred in the Heidelberg laboratory. These embrace researches on the absorption of gases, on diffusion, on the electrolytic preparation of metals, on photo-chemistry, on gasometric analysis, the invention of the magnesium light, the Bunsen lamp and galvanic element, &c. The most brilliant discovery of all still remains, that of spectral analysis, made in 1860 in company with Kirchhof, and leading to the immediate detection of caesium and rubidium.

SCIENTIFIC SERIALS

THE current number of the *Journal of Anatomy and Physiology* commences with a paper by Drs. Lawes and Gilbert on the formation of fat in the animal body, in which from experiments on pigs it is shown most definitely that the amount of fat produced is not dependent on the amount of nitrogenous food ingested.—Dr. Ringer and Mr. Bury describe the influence of salicine on the healthy body with special reference to its influence on the temperature, in which it is demonstrated that the drug, like quinine, produces a slight depression for a brief period only.—Mr. T. W. Bridge writes on the cranial osteology of *Amia calva*, describing in detail the osseous elements of the skull, with a double plate illustrating it.—Prof. Rutherford and M. Vignal continue their account of experiments on the biliary secretion of the dog; the action of the sulphates of sodium, magnesium, potassium, phosphate, chloride, and bicarbonate of sodium, bicarbonate of potassium, chloride of ammonium, nitro-hydrochloric acid, and mercury are discussed.—Prof. Cleland describes a Sulu skull and gives suggestions for conducting craniological researches.—Mr. F. M. Balfour continues his valuable study of the development of elasmobranch fishes, completing the history of the primitive alimentary canal.—Mr. B. T. Lowne writes on the quantitative relation of light to sensation, as a contribution to the physiology of the retina.—Mr. W. H. Gaskell continues his observations on the vasomotor nerves of striated muscle, conducted in the laboratory of Trinity College, Cambridge, describing the normal circulation in muscle, the effects of section of the nerve, the effects of stimulating their ends, and the nature of vascular dilatation.

Reichert und Du Bois Reymond's Archiv, 1876, Part 4 (issued January, 1877).—J. Steiner, researches on the influence of temperature on the nerve and muscle current.—F. Boll on the structure of the electrical plates of torpedo.—G. Colasanti, anatomical and physiological researches on the arms of cephalopods.—E. A. Babuchin, further researches on electrical and pseudo-electric organs.

1876, Part 5.—H. Erler, on the relation between the exhalation of carbonic acid and the variation of animal temperature.—J. Hirschberg, dioptrics of the eye.—E. Dreher, on the theory of sight.

1876, Part 6 (issued April, 1877).—R. Hartman, contribution to the zoology and zootomy of the anthropoid apes.—H. Frey, on the vasomotor nerves of the extremities.—E. Hitzig, new researches on the brain.—W. Grüber, a series of papers on abnormalities of human anatomy.—G. Salomon, contribution to leukaemia.

Zeitschrift für wissenschaftliche Zoologie, 1877, Parts 1 and 2 (in one).—F. E. Schulze, on the genus *Halisarca*, with five plates.—C. von Siebold, on the sexual development of urodele larvæ, referring especially to *Triton alpestris*.—F. de Filippi, on the larva of *Triton alpestris*.—A. Weismann, on the natural history of the *Daphniæ*, parts 2, 3, and 4, 160 pp., with five plates.

Part 4.—H. Simroth, anatomy and fission of *Ophiactis virens*, 108 pp., four plates.—H. Dewitz, on the structure and development of the sting in ants.—L. Graff, on *Neomenia* and *Chæto-derma*.—A. Brandt, on the frog's ovary, and the segmentation of the ovum.

Vol. 29, Part 1.—H. von Ihering, on the formation of ova in mollusca.—F. Vejdovsky, on the anatomy and metamorphosis of *Tracheliastes polycolpus* (parasitic copepod), three plates.—H. Ludwig, on the anatomy of *Rhizocochrinus lofolensis*.—F. E. Schulze, on sponges, part 3. Family Chondrosidæ.

Morphologisches Jahrbuch, vol. iii. Part 2.—H. von Ihering, on the nervous system of Amphineurida and Arthrocochlidæ (gastropods).—H. Strasser, on the air-sacs of birds.—E. Calberla, on the development of the spinal canal and cord in Teleostei and Lampreys.—O. Hertwig, further contribution on the fertilisation and segmentation of the animal ovum.

Revue des Sciences Naturelles, vol. 6, June, 1877.—This number contains, in addition to its extended reviews of recent research in zoology, botany, and geology, articles on the classification of the animal kingdom, by A. Villot, on diatoms, by E. Guinard, on the cretaceous formation of Southern France, by M. Leymerie, and part of a catalogue of the terrestrial and fluviatile molluscs of the department of L'Hérault, by E. Dubrueil.